WHAT IS CLAIMED IS:

1. An arrangement for supporting the weight of a heat sink structure which is arranged on a chip carrier package, said chip carrier package including a substrate mounting at least one microchip; a printed circuit board, and an array of solder balls being interposed between said substrate and said printed circuit board and supporting said substrate on said printed circuit board, comprising:

   a locking connection extending between said substrate and said printed circuit board;

   said locking connection including adjustable compliant structures operatively connected to said printed circuit board and extending into biasing contact with said substrate for counteracting the weight of said heat sink structure and reducing the compressive force thereof generating stresses in the solder balls of said solder ball array.

2. An arrangement as claimed in Claim 1, wherein each said adjustable compliant structures comprises a threaded aperture extending through said printed circuit board, and a screw member being arranged in said threaded aperture, said screw member having a free end of the screw in biasing contact with the surface of the substrate which is distant from the substrate surface facing the heat sink structure.

3. An arrangement as claimed in Claim 2, wherein said substrate comprises a rectangular or square plate mounting said at least one microchip, a plurality of said screw members, each respectively being in biasing contact with respectively one corner of said substrate so as to relieve compressive stresses acting on the solder balls located in at least said corner regions of the substrate.

4. An arrangement as claimed in Claim 3, wherein further said screw members contact said substrate in a spaced relationship proximate the edges of said substrate so as to relieve compressive stresses in solder balls located proximate said edges.

5. An arrangement as claimed in Claim 2, wherein said screw member is constituted of a compliant material.

6. An arrangement as claimed in Claim 5, wherein said compliant material comprises Kovar (reg. TM).

7. An arrangement as claimed in Claim 5, wherein said compliant material comprises beryllium copper alloy.

8. An arrangement as claimed in Claim 2, wherein an enlarged head end of said screw projects from a surface of said printed circuit board distant from said substrate; and a helical coil spring encompasses a projecting screw portion intermediate said head end and said printed circuit board surface so as to impart a biasing pressure against said printed circuit board surface.

9. An arrangement as claimed in Claim 8, wherein apertured plate means is positioned in surface contact with said printed circuit board surface, said screw member extending through said apertured plate, and said helical coil. spring bearing at one end thereof against said plate means.

10. An arrangement as claimed in Claim 9, wherein said plate means comprises a frame member extending along the peripheral surface portion of said printed circuit board.

11. A method of supporting the weight of a heat sink structure which is arranged on a chip carrier package, said chip carrier package including a substrate mounting at least one microchip; a printed circuit board, and an array of solder balls being interposed between said substrate and said printed circuit board and supporting said substrate on said printed circuit board, said method comprising:

    providing a locking connection between said substrate and said printed circuit board;

said locking connection including adjustable compliant structures operatively connected to said printed circuit board and extending into biasing contact with said substrate for counteracting the weight of said heat sink structure and reducing the compressive force thereof generating stresses in the solder balls of said solder ball array.

12. A method as claimed in Claim 10, wherein each said adjustable compliant structures comprises forming a threaded aperture to extend through said printed circuit board, and arranging a screw member in said threaded aperture, said screw member having a free end of the screw in biasing contact with the surface of the substrate which is distant from the substrate surface facing the substrate surface facing the heat sink structure.

13. A method as claimed in Claim 12, wherein said substrate comprises a rectangular or square plate mounting said at least one microchip, a plurality of said screw members, each respectively being in biasing contact with respectively one corner of said substrate so as to relieve compressive stresses acting on the solder balls located in at least said corner regions of the substrate.

14. A method as claimed in Claim 13, wherein further said screw members contact said substrate in a spaced relationship proximate the edges of said substrate so as to relieve compressive stresses in solder balls located proximate said edges.

15. A method as claimed in Claim 12, wherein said screw member is constituted of a compliant material.

16. A method as claimed in Claim 15, wherein said compliant material comprises Kovar (reg. TM).

17. A method as claimed in Claim 15, wherein said compliant material comprises beryllium copper alloy.

18. A method as claimed in Claim 12, wherein an enlarged head end of said screw projects from a surface of said printed circuit board distant from said substrate; and a helical coil spring encompasses a projecting screw portion intermediate said head end and said printed circuit board surface so as to impart a biasing pressure against said printed circuit board surface.

19. A method as claimed in Claim 18, wherein apertured plate means is positioned in surface contact with said printed circuit board surface, said screw member extending through said apertured plate, and said helical coil. spring bearing at one end thereof against said plate means.

20. A method as claimed in Claim 19, wherein said plate means comprises a frame member extending along the peripheral surface portion of said printed circuit board.